Is There Backlash to Social Pressure?

A Large-scale Field Experiment on Voter Mobilization

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Abstract:
Using social pressure to mobilize voters has generated impressive increases in turnout (Gerber, Green, and Larimer 2008). However, voters may have negative reactions to social pressure treatments that reduce their effectiveness. Social psychologists have observed this 'reactance' to persuasive pressure about other behavior, but it has been overlooked in voter mobilization. Using a large-scale field experiment, we find treatments designed to reduce reactance are just as effective as heavy-handed social pressure treatments in mobilizing voters. The success of gentler social pressure treatments should make the use of social pressure more palatable to voter mobilization organizations.

Keywords: voting; voter mobilization; field experiment; social pressure; reactance.

Persuasion is a central feature of politics. Interest groups seek to persuade legislators to support policies, diplomats seek to persuade nations to avoid conflict, and political organizations seek to persuade people to turn out to vote. A great deal of attention is paid to what makes these efforts at persuasion successful. However, efforts to persuade sometimes prove inconsequential or, worse, result in a backlash effect when people move in the direction opposite to the persuasive pressure.

There is a basic trade-off between exerting pressure to alter behavior and eliciting opposition to that pressure. In social psychology, the tendency for people to push back in response to forceful messages designed to change their behavior has informed theories of reactance (Brehm 1966; Brehm and Brehm 1981). Reactance theory explains that individuals with a negative response to a message may ignore it (Burgoon, Alvaro, Grandpre, and Voulodakis 2002; Stewart and Martin 1994), perform the opposite of the behavior advocated (Worchel and Brehm 1970; Ringold 2002; Schultz 1999), or attack the source of the message. Further, more forceful messages about changing behavior are more likely to elicit reactance (Miller, Lane, Deatrick, Young, and Potts 2007; Dillard and Shen 2005; Albarracin, Cohen, and Kumkale 2003; Grandpre, Alvaro, Burgoon, Miller, and Hall 2003). Attacks on the source of the message may have negative reputational, political, or financial implications for the sponsor of the communication.

Despite the potential for negative consequences of persuasive appeals seen in non-political settings, political scientists who study voter mobilization have focused almost exclusively on the positive impact (or lack of impact) of communication to mobilize voters. For example, Rosenstone and Hansen (1993) view mobilization activities as uniformly positive and powerful: they estimate that half the variation in voter participation can be attributed to the mobilizing activities of political elites. Recent research using field experiments to evaluate voter mobilization strategies demonstrates that communication encouraging voting can successfully increase turnout in a variety of electoral settings (see Green and Gerber 2008 for a review). In particular, recent field experiments using social pressure to encourage voter participation have generated impressive increases in turnout (Gerber, Green, and Larimer 2008, 2010; Davenport 2010; Panagopolous 2010).

On the other hand, little attention has been paid to the possibility that political communication strategies can be counterproductive if they generate reactance among voters. Although Gerber et al. (2008) acknowledge that social pressure treatments generate an inherent "tension" between "the compliance-inducing effects of shaming and the compliance-reducing effects of heavy-handedness" (p.35) their experiment does not examine the negative effects of voter reactance. Our field experiment is the first to assess the tension between persuasion and reactance in voter mobilization.

Social psychologists have found evidence of reactance when attempting to reduce alcohol consumption, prevent littering, alter consumer product choice, prevent illegal drug use, improve diet, and eliminate smoking (see Burgoon, Alvaro, Grandpre, and Voulodakis 2002 for a review). In response, social psychologists have developed tactics for reducing reactance to communication which promotes change in behavior (Miller et al. 2007; Albarracin et al. 2003; Grandpre et al. 2003; Wendlandt and Schrader 2007; Kivetz 2005). Using indirect and ambiguous language reduces reactance while still generating the desired change in behavior (Miller et al. 2007; Albarracin et al. 2003; Grandpre et al. 2003). Similarly, providing additional information about the topic of communication (e.g. littering, smoking, etc.) distracts the recipient from the message's intent to alter behavior and can thereby reduce reactance while still delivering the desired change in behavior (Miller et al. 2007; Wendlandt and Schrader 2007; Kivetz 2005).

We draw on these reactance-reducing techniques to create three alternatives to Gerber et al.'s (2008) heavy-handed social pressure treatments. The key component of Gerber et al.'s social pressure mailings is a table showing turnout in past elections. Gerber et al.'s treatments generated social pressure through the threat of social sanction for failing to vote. Their vote history table makes this threat credible by showing that each voter's past turnout has been observed. Building on this idea, we exert social pressure in each treatment by including a vote history table. Our alternative treatments frame the vote history table using indirect, ambiguous language and/or additional content as techniques to reduce reactance.

Reactance theory and empirical findings about reactance-reducing techniques suggest that our alternatives should generate equal or greater increases in voter turnout. We tested this hypothesis using

a large-scale field experiment among 95,788 unmarried women registered voters during the 2007 Kentucky gubernatorial election.[1] We find that the increase in turnout from our alternative social pressure treatments is equal to the increase from Gerber et al.'s more heavy-handed social pressure treatment. It appears that the credible threat of monitoring compliance with the norm of voting is doing the work in each treatment. In addition to the theoretical importance of this finding, the equal effectiveness of treatments designed to elicit less reactance has implications for the use of social pressure treatments by voter mobilization organizations.

This essay proceeds as follows: First, we review the relevant previous research on leveraging social norms with social pressure treatments and on voter mobilization field experiments. Next, we explain the research design of the field experiment. The experiment was conducted in cooperation with a non-partisan organization that seeks to mobilize unmarried women to vote.[2] We describe the selection of the study population for our experiment, the context of the Kentucky 2007 general election, the replication of Gerber et al.'s (2008) social pressure treatment, and our three alternative social pressure treatments. The results from our field experiment indicate that social pressure treatments are just as effective without the heavy-handedness that is more likely to cause reactance. We conclude with a discussion of the theoretical and practical implications of lowering reactance to voter mobilization communication and, presumably, lowering the risk of backlash against organizations that sponsor social pressure treatments.

LEVERAGING SOCIAL NORMS TO INFLUENCE TURNOUT

Voters have little rational incentive to vote because they have only a tiny probability of casting a vote pivotal to the election outcome. Therefore, the levels of turnout observed in elections must come from some other benefit which voters derive from the act of voting. The rational choice literature on the calculus of voting usually assumes this benefit is intrinsic, something that reflects the voter's own political

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[1] Since our experiment includes only female voters, we use the female pronoun throughout this essay for clarity and to acknowledge this limitation of the external validity of our findings.

[2] The name of our partner organization has been withheld in accordance with our arrangement for their cooperation in conducting and publishing this field experiment. The name of the organization has been disclosed to the journal editors.

beliefs. This intrinsic benefit derives from expressing personal values such as civic duty, group solidarity, partisan affiliation (Downs 1957; Riker and Ordeshook 1968; Aldrich 1993; Blais 2000) or support for the general welfare (Edlin, Gelman, and Kaplan 2007).

Gerber et al. (2008) point out that there are extrinsic as well as intrinsic benefits to voting. Voters may receive a reward from an external source for casting a ballot. In particular, there is a social norm in the United States that citizens should vote. Failure to vote may result in punishment via sanction by social peers. Therefore, the social norm that citizens should turn out to vote can be leveraged to increase the extrinsic benefits of voting. Social pressure treatments increase the extrinsic benefits of voting by raising the perceived likelihood of costly social sanction for failing to vote.

Social norms are rules of conduct which are communicated through social interaction, recognized and internalized by individuals, and enforced by social sanction ranging from expressions of disapproval to acts of violence (Cialdini and Goldstein 2004). Social norms have been leveraged to influence socially significant behaviors such as recycling, drug and alcohol use, eating disorders, gambling, and littering (Cialdini and Goldstein 2004; Schultz, Nolan, Cialdini, Goldstein, and Griskevicus 2007).

Considerable observational evidence suggests that fear of social sanction for failing to vote is a major component in motivation to turn out (Funk 2009; Knack and Kropf 1998; Knack 1992; Harbaugh 1996). This observation is also consistent with an array of findings in social psychology that compliance with a social norm is conditioned by an individual's perception that their behavior is observed (Schultz 1999; Cialdini and Goldstein 2004; Schultz et al. 2007; Whatley, Webster, Smith and Rhodes 1999; Posner and Rasmusen 1999; Rind and Benjamin 1994).

Given the social norm that citizens should vote, heightening a citizen's perception that voting behavior is being observed should increase her likelihood of turning out because the perceived extrinsic benefits are increased.[3] Therefore, social pressure voter mobilization treatments seek to increase the perception that voting behavior is under surveillance and that social sanction will result from failing to turn out.

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[3] The influence of social norms on voting behavior is moderated by an individual's degree of engagement with a social network (Klofstad 2009).

On the other hand, one of the central concepts of reactance theory is that people derive significant psychological benefit from demonstrating their freedom to choose their own behavior (Brehm 1966; Brehm and Brehm 1981). With regard to voting, this benefit may encourage a voter to demonstrate to observers that she is freely choosing her behavior by violating social norms. If failing to vote is a way for a voter to express her freedom to choose her behavior, then resisting social pressure increases the intrinsic benefit of not voting. Therefore, the observed effect of social pressure treatments is the sum of the opposing incentives from the extrinsic benefit of voting and the intrinsic benefit of not voting.

RESEARCH DESIGN

Our field experiment methodology is grounded in a larger literature on voter mobilization that has examined face-to-face canvassing, live phone calls, automated (robo) calls, door-hangers, email, text messages, television, radio, events, vote-by-mail recruitment, and voter registration (see Green and Gerber 2008 for a review). Several field experiments have examined the effect of direct mail using messages designed to increase turnout by highlighting civic duty, racial or ethnic group solidarity, or party affiliation. These past field experiments find that direct mail aimed at increasing the intrinsic benefits of voting rarely has any effect on turnout (Green and Gerber 2008 pp. 53-75). However, a single mailer delivering a social pressure message about the surveillance of voting has generated impressive increases in turnout in several recent field experiments (Gerber et al. 2008, 2010; Grose and Russell 2008; Panagopoulos 2010).

Our treatments consisted of a single letter mailed to each targeted voter. The letters were mailed on plain paper folded into thirds to replicate the mailings in Gerber et al. (2008).[4] The mailings were expected to arrive in homes between October 31 and November 3, prior to Election Day on November 6, 2007.

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[4] One treatment, described below, included a mail survey for the voter to return to the sponsoring organization. This mailer was placed inside a standard envelope along with a pre-addressed return envelope.

Setting

Kentucky is one of the few states to hold major statewide elections in odd-numbered years. Every four years, the state offices of governor and lieutenant governor, secretary of state, attorney general, auditor of public accounts, treasurer, commissioner of agriculture, and judicial offices are on the ballot. The state legislature, local offices, and federal offices appear on the even-year ballots. In Kentucky, the contests for statewide constitutional offices create a level of interest, salience, and turnout approaching the level seen in federal midterm elections.

The 2007 Kentucky gubernatorial general election was strongly contested between incumbent Republican governor Ernie Fletcher and Democratic nominee Steve Beshear. Governor Fletcher was under a cloud of scandal due to grand jury indictments of himself and senior administration officials for conspiracy, official misconduct, and political discrimination in hiring state employees. Beshear was a former state legislator, former state attorney general, and former lieutenant governor. He had also previously run for governor and the US Senate. Although it was a close race for several months, the scandals took a toll on Fletcher's re-election campaign, and he lost to Beshear by a 59-41 margin on November 6, 2007.

Study Population

In order to conduct this experiment, we partnered with an organization seeking to mobilize unmarried women registered voters to cast their ballot in the 2007 Kentucky gubernatorial election. As stated in the disclaimer on each mailing (see Appendix), the organization "works to study ways to encourage voting and to increase participation in the electorate" and "is a non-partisan, non-profit organization that does not support any candidate."

The study population was selected from the statewide list of registered voters maintained by a commercial voter file firm. Our experiment included 95,788 registered voters who fit the organization's programmatic criteria and our experimental design. Targeting multiple voters at the same address creates correlations between individual observations (Nickerson 2008) that make measurement of the effect of treatments less precise, so this field experiment utilized voter mailing addresses with only one

targeted voter. Since the study population consisted of unmarried women, this restriction reduced the otherwise eligible population by less than 10%.

Both observational research (Malchow 2008; Hillygus 2005; Parry, Barth, Kropf, and Jones 2008) and previous field experiments (Arceneaux and Nickerson 2009; Gerber and Rogers 2009; Gerber et al. 2008; Green and Gerber 2008 p. 174; Niven 2004) show that the effect of mobilization interventions is concentrated among low and moderate turnout probability voters. Therefore, we narrowed the study population to voters who had a 5% to 75% probability of voting in the 2007 general election. The voting probability was based on predictive modeling prepared by the organization's direct mail firm using the procedure described in Malchow (2003). The primary components of the predictive model were past individual voting history and demographic characteristics strongly correlated with turnout.

Treatments

In the pioneering field experiment using social pressure for voter mobilization, Gerber et al. (2008) warned voters that their compliance with the social norm of voting would be observed in the upcoming election. They tested whether increasing the threat of surveillance would increase turnout. They found the impact on turnout increased as the threat of surveillance expanded. For their Civic Duty treatment, they sent a mailing about the civic duty to vote without any threat of surveillance. This treatment increased turnout by 1.8 percentage points. Their Hawthorne treatment informed citizens that researchers would observe whether they voted. This mild threat of surveillance generated a 2.5 percentage point increase in turnout.

At the next level of social pressure, two features were added to Gerber et al.'s treatments. The Self treatment directly warned the voter about surveillance and demonstrated the credibility of this claim by including a table listing the voter's turnout in recent past elections. The Self treatment generated a substantially larger increase in turnout of 4.9 percentage points. In an extension of their experiment, Gerber et al. (2010) again found that variations of the Self treatment increased turnout by 4.1 to 6.4

percentage points, depending on whether the treatment showed the recipient as voting or abstaining in previous elections.[5]

In order to study whether our alternative treatments would impact the magnitude of the effect on voter turnout, we replicated the Gerber et al. (2008) Self treatment as a reference point. Gerber et al.'s results suggest that showing voters their past vote history is key to generating a large effect from social pressure mailings. Each of our alternative treatments contains the vote history table from Gerber et al.'s Self treatment in order to make credible the surveillance of voting (see Appendix). Our vote history table has columns for the June 2006 primary election and the November 2006 general election with 'Yes' or 'No' indicating whether the public records show that the voter cast a ballot. There is also a blank column for the November 2007 general election to imply future surveillance.

Our Self treatment closely replicates the Gerber et al. Self treatment.[6] Our Self treatment explicitly warns that voting behavior is under surveillance. The first line of our Self letter warns, "WHO VOTES IS PUBLIC INFORMATION!" The Self treatment signals surveillance about voting by saying, "[t]his year we are taking a different approach. We are reminding people that who votes is a matter of public record." The letter then describes the vote history table and tells the recipient that "[w]e intend to mail you an updated chart when we have that information. We will leave the box [for the 2007 election] blank if you do not vote."[7] (Copies of the mailings are in the Appendix.)

Our alternative treatments make two types of changes to the basic Self treatment. These changes draw upon reactance-reducing techniques which have been successful for other types of behavior. Our changes are intended to provide different reasons for presenting the vote history table in each treatment.

Since the use of more ambiguous and indirect language has been shown to successfully reduce the degree to which reactance undermines persuasive communication for other behavior (Miller et al. 2007; Albarracin et al. 2003; Grandpre et al. 2003), we sought to make the social pressure less

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[5] Gerber et al.'s (2008) strongest threat of enforcement of the norm of voting was applied by telling voters their 'Neighbors' would observe their voting. The surveillance was made credible by expanding the voting table to include the voting record of neighbors. This treatment increased turnout by 8.1 percentage points.

[6] Our Self treatment and the Gerber et al. Self treatment differ only by minor changes in the text of the mailings.

[7] Updated charts were not sent after the election due to our partner organization's budget constraints.

threatening. Our first change was to describe the surveillance of voting as an aspect of research. The language in our Hawthorne treatment is much softer than the Self treatment: "This year, we're trying to figure out why people do or do not vote. We'll be studying voter turnout in the November 6 statewide election for governor." The threat of social sanction for failing to vote is further mitigated by saying that "[a]nything we learn about your voting or not voting will remain confidential and will not be disclosed to anyone else."

The inclusion of the vote history table in our Hawthorne treatment is an important difference from Gerber et al.'s Hawthorne treatment. Their research design cannot distinguish between the effects of the language used about surveillance and the impact of including the vote history table. Our design isolates the effect of the language used to impart social pressure because all of our treatments include the same vote history table to demonstrate surveillance.

Our second change was adding elements to the Self and Hawthorne treatments to make them appear more helpful and less threatening. Adding content to prime voters to think about their freedom to chose their actions is expected to reduce the degree to which reactance undermines persuasive messages (Miller et al. 2007; Wendlandt and Schrader 2007; Kivetz 2005). We added content to distract voters from our intent to alter their behavior with information and questions that primed voters to consider how they choose whether or not to vote.

Adding a survey in the Hawthorne-plus-Survey treatment served two purposes. The first was to draw voters' attention to the ostensible research purpose of the mailing. Second, the survey questions about factors in past and future decisions about voting were intended to prime the voter to think about voting as a choice.[8] In order to reduce the threat of surveillance in the Hawthorne-plus-Survey treatment the mailing claims its purpose is to collect survey data: "we are asking you to complete and return the attached survey indicating the reason why you are not participating in elections." Only the vote history table suggests surveillance of voting.

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[8] Unfortunately, the returned surveys were not saved by the organization since they were intended only to disguise the social pressure intent of the treatment.

The Self-plus-Help treatment re-frames the presentation of the vote history table as a reason for offering assistance to the voter. The letter begins with an announcement of surveillance similar to the Self treatment: "PUBLIC RECORDS SHOW THAT YOU DID NOT VOTE IN THE PRIMARY OR GENERAL ELECTION LAST YEAR". However, the Self-plus-Help treatment then describes the vote history table as an opportunity to "correct" the records rather than as proof of past failures to vote. This framing of the vote history table helps reduce the threat of social sanction for failing to vote. After presenting the table of voting history, the letter directs voters to a website with information about candidates and provides a phone number where they can request a ride to their polling place. The letter closes with a civic duty message about the importance of voting. The information is intended to prime voters to think about how they use information in choosing whether to vote.

Manipulation Check

In order to make sure that the mailings were perceived as we intended, we conducted a manipulation check using a convenience sample of 25 students and acquaintances. Each person was asked to read the four mailings and then rank the mailings from 1 to 4 in response to a series of questions. The responses were consistent with the intention of each treatment. Table 1 presents the mean response to the questions in the order the questions were asked. A low value indicates an affirmative answer to that question (e.g. more motivated to vote, more likely to make them angry, etc.).

[INSERT TABLE 1 ABOUT HERE]

Table 1 shows that the Self and Self-plus-Help treatments generated the greatest perception of surveillance of voting. Unexpectedly, the Hawthorne-plus-Survey treatment generated a stronger perception of surveillance than the basic Hawthorne treatment. This perception seems likely to be a product of the survey creating an impression of greater interest in voting behavior.

The direct indicators of reactance in Table 1 (Rains and Mitchell Turner 2007; Dillard and Shen 2005) also show the expected results: the Self treatment generated the most anger from the respondent and the greatest likelihood that the respondent would call to complain. The Self-plus-Help treatment ranked next on both questions. The Hawthorne treatment was less likely to draw the respondents' ire

than either version of the more heavy-handed Self language. The Hawthorne-plus-Survey treatment was ranked the least likely to provoke these indicators of reactance.

The rankings in Table 1 also indicate success in priming voters to think about voting as a choice. The Self-plus-Help and Hawthorne-plus-Survey treatments were perceived to be more interested in voters' decisions about whether to vote than the other treatments. They were also viewed as more motivating, helpful, and informative. Contrary to expectations, the Self-plus-Help treatment was perceived to be more concerned with why a voter chose to cast a ballot than the basic Hawthorne treatment, perhaps because the information provided in the Self-plus-Help treatment addressed prevalent reasons that voters fail to cast ballots.

Random Assignment

After selecting the 95,788 registered voters for our study population, we randomly assigned each voter to a treatment group or to the control group. Our partner organization decided to use the Self-plus-Help treatment only among voters who had not voted in either the 2006 general or 2006 primary elections.[9] This targeting of the Self-plus-Help treatment required assignment using two sets of criteria. The first universe includes only voters who did not vote in 2006 and allows us to measure the impact of all four treatments. We randomly assigned the 78,441 voters who had not voted in 2006 to one of the four treatments or the control group (Table 2, first row). In the second universe, there were no additional restrictions on our study population. We randomly assigned 78,179 voters to one of three treatments or the control group; the Self-plus-Help treatment was not used in this universe (Table 3, first row).

[INSERT TABLE 2 & TABLE 3 ABOUT HERE]

Tables 2 & 3 demonstrate that the experimental groups are closely balanced in terms of covariates that predict voter turnout, including voting record in past elections, age, and partisan registration. Table 2 shows the absence of any relationship between covariates and assignment to the four treatments or control group among voters who did not cast a ballot in 2006. The last row of Table 2

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[9] The major advantage of conducting field experiments in conjunction with organizations is the ability to do more and larger tests of interesting hypotheses about voting behavior than academic research funds allow. The downside is the need to accommodate decisions by partner organizations, even when they complicate the research design.

verifies the randomization of assignment statistically with a likelihood ratio test from a multinomial logit regression of assignment on the observable covariates. The multinomial logit regression includes dummy variables set to 1 if the voter cast a ballot in each past election, dummy variables set to 1 for registration as a Democrat or Republican, and age and age squared in accordance with the usual specification of the relationship between age and voting. A likelihood ratio test with 32 degrees of freedom (8 covariates X 4 treatments) is not significant, as expected given random assignment: LR chi-square = 36.93, p = .252. Table 3 shows the absence of any relationship between covariates and the assignment to the three treatments or control group in the broader universe. A likelihood ratio test with 27 degrees of freedom (9 covariates X 3 treatments) is not significant: LR chi-square = 25.96, p = .521. .

RESULTS

Turnout is measured using the voter participation records from the Kentucky State Board of Elections for the November 6, 2007 general election. This individual level vote history was matched to our study population using unique record identifiers for every registered voter.[10]

Effect Among 2006 Nonvoters

For the universe of voters who had not cast a ballot in 2006, Table 4 reports that each of the four treatments increased turnout compared to the control group. The control group turned out at a rate of 6.8%. In the Self and Hawthorne treatment groups, the turnout was 8.9%, an increase in turnout of 2.1 percentage points above the control group. The Self-plus-Help treatment group had a turnout of 8.7%, an increase in turnout of 1.9 percentage points. The Hawthorne-plus-Survey treatment group had a turnout of 9.0%, an increase of 2.2 percentage points. The increases in turnout were quite impressive: the voters who were sent social pressure treatments have turnout levels about 30% higher than the control group.

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[10] We report only an intent-to-treat effect. When contact rates can be gathered, e.g. for canvassing and phone calls, the field experiments literature on voter mobilization often reports the treatment-on-treated effect among voters successfully contacted (Green and Gerber 2008; Gerber and Green 2000). Field experiments using mail cannot calculate a treatment-on-treated effect because the contact rate is unknown.

[INSERT TABLE 4 ABOUT HERE]

In Table 5, we use probit regression to obtain more precise estimates of the increases in turnout from each treatment and their standard errors. Since voter turnout is a dichotomous dependent variable and the turnout in our control group is very low, we use probit regression to estimate the effects (Green 2009; Gerber and Green 2000). This model may be stated as:

$$P_i = \Phi (\beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_3 D_{3i} + \beta_4 D_{4i}) \qquad (1)$$

where P_i is the probability of turnout for a voter, D_{1i}, D_{2i}, $D_{3i,}$ and D_{4i} represent each of the four treatments, and Φ is the normal cumulative distribution function.

In the upper portion of Table 5, the first column reports the probit coefficients and standard errors for equation 1. As expected, given the large sample size of the experiment, the effect of each treatment is highly significant ($p < 0.001$).[11] The conventional practice in voter mobilization field experiments has been to use a one-sided significance test because there was no theoretical expectation of a negative effect on turnout from persuasive communication (e.g. Gerber et al. 2008; Gerber and Green 2000; see Green and Gerber 2008 for a review). The potential for reactance requires using a two-sided test of statistical significance in order to detect either a negative effect, where reactance is larger than the positive impact of our communication, or a positive effect.

[INSERT TABLE 5 ABOUT HERE]

Probit coefficients indicate the standard deviation shift in a normal distribution, so the actual change in probability of turnout depends on the starting point of the shift. For example, the 0.149 probit shift caused by the Self treatment translates to an increase of 2.0 percentage points when starting from the mean turnout of 6.8% in the control group. If the starting point were a 50% probability of turning out, the 0.149 probit effect translates to a 5.6 percentage point increase in the probability of turning out. The lower section of Table 5 shows the actual change in probability caused by each of the treatments. As expected, these changes match the increases in turnout from Table 4.

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[11] Gerber et al. (2008) report clustered standard errors to account for correlation within a household (Nickerson 2008; Arceneaux 2005). Clustered standard errors are unnecessary here because we have only one targeted voter at each address.

The second column of Table 5 expands equation 1 to include covariates correlated with turnout: age and age squared, registration with each of the major parties, and voting in the 2006 general election, 2004 general election, 2003 general election, 2002 general election, and 2000 general election. This expanded model can be stated:

$$P_i = \Phi\left(\beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_3 D_{4i} + \beta_3 D_{4i} + \lambda_1 C_{1i} + \lambda_2 C_{2i} + \ldots + \lambda_9 C_{9i}\right) \qquad (2)$$

where C_{1i}, C_{2i}, ..., C_{9i} are the covariates. The effects from each of the treatments are again highly significant in the expanded model ($p < 0.001$). Adding covariates results in very minor changes that do not alter the substantive interpretation of the results.

Effects among Full Universe

Table 6 reports that the three treatments used in the broader universe increased turnout compared to the control group. The turnout for the control group in this broader universe was 13.2%. The turnout for the Hawthorne treatment (15.8%) and the Hawthorne-plus-Survey treatment (15.7%) were nearly identical, an increase of approximately 2.5 percentage points. The Self treatment had a turnout of 16.3%, an increase in turnout of 3.0 percentage points.

[INSERT TABLE 6 ABOUT HERE]

In Table 7, we again use probit regression to obtain more precise estimates of the effect of each treatment and their standard errors. As above, the first column reports the basic model and the second column includes covariates. The effect of each treatment is highly significant ($p < 0.001$) in both models. The changes in probability in the lower portion of Table 7 are nearly identical to the increases in turnout calculated in Table 6, as expected.

[INSERT TABLE 7 ABOUT HERE]

Different Effects from Each Treatment?

Our main interest is whether the different framing of social pressure treatments leads to different impacts on turnout. Therefore, we examine the differences among the increases generated by the treatments. In comparing the treatments, the null hypothesis is that there is no significant difference

among their effects. Failure to reject this null hypothesis is important because it means that the same effect on voter turnout can be generated by treatments expected to spur less reactance.

The effects from each of the four treatments are statistically indistinguishable. We use a likelihood ratio chi-square test of the probit coefficients in the model with covariates to determine whether the effects from the treatments are different. In Table 5, the variation in the effect from the four treatments is not statistically significant (p = 0.923) and pair-wise comparisons are also not significant. In Table 7, the difference in the effects across the three treatments (p = 0.316) and pair-wise comparisons are also not statistically significant.[12]

Cost per Additional Vote

These treatments are very cost effective in comparison to other voter mobilization techniques. Table 8 shows the cost per additional vote for each treatment. The Hawthorne, Self, and Self-plus-Help mailings each cost about $0.30 for design, printing, mail processing, and postage. The Hawthorne-plus-Survey mailing cost $0.40 per mailer due to the use of an exterior envelope and reply envelope for the survey.

[INSERT TABLE 8 ABOUT HERE]

Among nonvoters in 2006, the cost per additional vote for the Self and Hawthorne treatments was approximately $15 and for the Self-plus-Help treatment was $16.67. The cost per additional vote was about $19 for the more expensive Hawthorne-plus-Survey treatment. In the broader universe with slightly higher percentage point effects on turnout, each additional vote cost roughly $10 for the Self treatment, $11.50 for the Hawthorne treatment, and $16 for the Hawthorne-plus-Survey treatment.

In previous field experiments, the most cost effective forms of mobilization were face-to-face canvassing and live phone calls with costs of approximately $29 and $38 per additional vote respectively (Green and Gerber 2008 p.139). All of our treatments were much more cost effective. Only the Gerber et al. (2008) social pressure treatments have been similarly cost-effective.

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[12] The pair-wise comparison that most closely approaches statistical significance is Self vs. Hawthorne-plus-Survey (p=0.139) which respectively had the strongest and weakest perceptions of surveillance according to the manipulation check. The p-values for the remaining pair-wise comparisons are two to four times larger.

DISCUSSION

Previous social pressure voter mobilization experiments had left open the question of whether reactance reduced the impact of social pressure. Each of our treatments used the vote history table to make credible the threat of surveillance of voting. The indistinguishable effects from all four treatments suggest that the demonstration of surveillance of voting is doing the major work to increase turnout.

If we assume that generating negative feelings about voting is harmful to democracy, then the equal effects from less heavy-handed social pressure treatments are an encouraging development. The intention in creating our alternative treatments was to mitigate the potential for reactance. The manipulation check indicates that treatments vary in their provocation of reactance. The equal effects on turnout from all of our treatments mean we can use social pressure treatments with less potential to generate reactance, without significantly reducing the impact on turnout. In short, social pressure treatments do not need to be heavy-handed to be effective.

The success of our alternative social pressure treatments has important implications for organizations seeking to increase voting participation. Since our alternative social pressure treatments appear to be less likely to elicit angry complaints about the sponsor of the communication, these less heavy-handed treatments should be more palatable to voter mobilization organizations, who have been reluctant to use this otherwise effective technique.

Our partner organization undertook this project to search for alternative ways to generate the mobilization effects from social pressure treatments while reducing the risk of backlash against the sponsor of the communication. Green and Gerber (2008) advise organizations not to use social pressure to mobilize voters because of the risk of negative publicity and other harmful repercussions to the organization. Social pressure treatments may serve an organization's short term utility by mobilizing voters in a particular election. However, reactance that causes voters to attack the sponsor of the social pressure treatments undermines the sponsoring organization's credibility with voters it will seek to mobilize in future elections, with policy-makers whom it hopes to influence, and most importantly with contributors who ensure the on-going existence of the organization. Candidates face an additional

disincentive against using social pressure: reactance to candidate sponsored social pressure treatments could lead voters to support their opponent.

Our results provide important replication of past experiments on social pressure and suggest further research on whether voter mobilization treatments generate reactance. Our experiment took advantage of an opportunity to partner with a civic organization to conduct a large-scale field experiment, but this partnership limited our study population to unmarried women with a low probability of voting. The literature on voter mobilization techniques has begun to address the question of whether the impact of voter mobilization treatments is conditional on voters' characteristics (Arceneaux and Nickerson 2009; Feller and Holmes 2009; Green and Gerber 2008; Niven 2004; see also Parry et al. 2008; Hillygus 2005). Future experiments are needed among other groups of voters to replicate our findings of equal effects from alternative social pressure treatments.

The significant increase in turnout in this experiment among unmarried women with a low probability of voting in the 2007 Kentucky general election confirms that social pressure is broadly effective at increasing voting participation. The low cost of the social pressure mailings means that these social pressure treatments are more cost effective than canvassing or phone calls. This experiment shows that social pressure can generate increased turnout without the use of heavy-handed social pressure.

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Table 1: Rankings of Treatments from Manipulation Check Using Convenience Sample

	Which mailing was most motivates you to vote?	Which mailing is most helpful?	Which mailing provides the most useful information about voting?	Which mailing appears most interested in whether you will vote?	Which mailing appears most interested in why you decide to vote or not to vote?	Which mailing makes you most feel like someone is watching whether or not you vote?	Which mailing makes you most angry?	Which mailing makes you most likely to call the sender to complain?
Self	2.9	3.2	3.0	3.0	3.2	2.0	1.6	1.9
Self plus Help	2.2	2.0	1.6	2.1	2.5	2.1	2.3	2.2
Hawthorne	2.8	2.8	3.0	2.9	2.9	3.4	2.9	2.9
Hawthorne plus Survey	2.1	2.0	2.4	2.1	1.5	2.5	3.2	3.0

Low values indicate a more affirmative response to the question and high values indicate a more negative response to the question.

Table 2: Relationship between Treatment Assignment and Covariates in Among Voters who Did Not Vote in 2006

	Control Group	Self Treatment	Hawthorne Treatment	Hawthorne plus Survey Treatment	Self plus Help Treatment
N of Individuals	19,561	13,689	13,842	13,740	17,609
Age (mean)	44	44	44	44	44
2006 General	--	--	--	--	--
2004 General	27%	27%	27%	27%	28%
2003 General	6%	6%	6%	7%	7%
2002 General	9%	9%	8%	9%	9%
2000 General	20%	20%	20%	20%	20%
Democrat	59%	59%	59%	59%	59%
Republican	31%	31%	32%	31%	32%

Log Likelihood Ratio=36.93 df=32 p=0.252

Table 3: Relationship between Treatment Assignment and Covariates Among Voters Using Study Population Criteria

	Control Group	Self Treatment	Hawthorne Treatment	Hawthorne plus Survey Treatment
N of Individuals	25,037	17,731	17,735	17,676
Age (mean)	44	44	44	44
2006 General	19%	20%	19%	19%
2004 General	35%	36%	35%	36%
2003 General	8%	8%	8%	9%
2002 General	11%	11%	11%	12%
2000 General	22%	22%	22%	22%
Democrat	60%	60%	59%	60%
Republican	32%	32%	32%	32%

Log Likelihood Ratio=25.96 df=27 p=0.521

Table 4: Turnout in the 2007 General Election Among Targeted Voters who Did Not Vote in 2006

	Control Group	Self Treatment	Hawthorne Treatment	Hawthorne plus Survey Treatment	Self plus Help Treatment
Turnout	6.8%	8.9%	8.9%	9.0%	8.7%
N of Voters		13,689	13,842	13,740	17,609

Table 5: Probit Regression Results for Effect on Turnout for Four Treatments Among Voters who Did Not Vote in 2006

	(a)	(b)
Self Treatment	0.146 (0.020)*	0.149 (0.021)*
Hawthorne Treatment	0.147 (0.020)*	0.151 (0.021)*
Hawthorne-plus-Survey Treatment	0.154 (0.020)*	0.149 (0.021)*
Self-plus-Help Treatment	0.134 (0.019)*	0.139 (0.020)*
Age	--	0.012 (0.002)*
Age^2	--	-0.000 (0.000)*
2004 General Election	--	0.409 (0.015)*
2003 General Election	--	0.450 (0.023)*
2002 General Election	--	0.141 (0.022)*
2000 General Election	--	0.091 (0.018)*
Democrat	--	0.080 (0.024)*
Republican	--	0.044 (0.026)
Constant	-1.149 (0.014)*	-1.985 (0.049)*
N of Individuals	78,441	78,441

* $p < 0.001$ † $p < 0.01$ ‡ $p < 0.05$

Estimated Change in Probability of Turnout

	(a)	(b)
Self Treatment	0.021*	0.020*
Hawthorne Treatment	0.021*	0.020*
Hawthorne-plus-Survey Treatment	0.023*	0.020*
Self-plus-Help Treatment	0.019*	0.018*

Note: Changes in probability are reported from probit regression. The changes are calculated with each each treatment held at zero and, in (b), the covariates held at mean.

Table 6: Turnout in the 2007 General Election Among Voters Using Study Population Criteria

	Control Group	Self Treatment	Hawthorne Treatment	Hawthorne plus Survey Treatment
Turnout	13.2%	16.3%	15.8%	15.7%
N of Voters	25,037	17,731	17,735	17,676

Table 7: Probit Regression Results for Effect on Turnout for Three Treatments Among Voters Using Study Population Criteria

	(a)	(b)
Self Treatment	0.132 (0.015)*	0.146 (0.017)*
Hawthorne Treatment	0.113 (0.015)*	0.139 (0.017)*
Hawthorne-plus-Survey Treatment	0.108 (0.015)*	0.121 (0.017)*
Age	--	0.016 (0.002)*
Age^2	--	-0.000 (0.000)*
2006 General Election	--	0.991 (0.013)*
2004 General Election	--	0.395 (0.014)*
2003 General Election	--	0.455 (0.019)*
2002 General Election	--	0.060 (0.018)*
2000 General Election	--	0.071 (0.015)*
Democrat	--	0.087 (0.023)*
Republican	--	-0.001 (0.025)
Constant	-1.112 (0.010)*	-2.026 (0.045)*
N of Individuals	78,179	78,179

* $p < 0.001$ † $p < 0.01$ ‡ $p < 0.05$

Estimated Change in Probability of Turnout		
Self Treatment	0.030*	0.028*
Hawthorne Treatment	0.026*	0.027*
Hawthorne-plus-Survey Treatment	0.025*	0.023*

Note: Changes in probability are reported from probit regression. The changes are calculated with each each treatment held at zero and, in (b), the covariates held at mean.

Table 8: Cost per Net Additional Vote from Social Pressure Treatments

Treatment	Cost per Mailing	Cost per Net Vote (Broader Universe)	Cost per Net Vote (Did not vote in 2006)
Self	$0.30	$10	$15
Self plus Help	$0.30	---	$16.67
Hawthorne	$0.30	$11.50	$15
Hawthorne-plus-Survey	$0.40	$16	$19

APPENDIX

Self Treatment

Dear Registered Voter:

WHO VOTES IS PUBLIC INFORMATION!

Why do so many people fail to vote? We've been talking about the problem for years, but it only seems to get worse.

This year, we're taking a different approach. We are reminding people that who votes is a matter of public record.

The chart below shows your name from the state list of registered voters, showing past votes, as well as an empty box which we will fill in to show whether you vote in the November 6 statewide election. We intend to mail you an updated chart when we have that information.

We will leave the box blank if you do not vote.

DO YOUR CIVIC DUTY - VOTE!

----
123 Main Street, Any Town, KY, 40600

	June 06	Nov 06	Nov 07
Jane Doe	No	Yes	

(Sponsoring Organization) works to study ways to encourage voting and to increase participation in the electorate.
(Sponsoring Organization) is a non-partisan, non-profit organization that does not support any candidate.

Self-plus-Help Treatment

Dear Registered Voter:

PUBLIC RECORDS SHOW THAT YOU DID NOT VOTE IN THE PRIMARY OR GENERAL
ELECTION LAST YEAR.

If our records, shown below, are not accurate, please email us at info@*(Sponsoring Organization)*.org
and we will correct our records. This information was taken directly from the state voter rolls which
are available for public inspection, but sometimes errors are made.

123 Main Street, Any Town, KY, 40600

	June 06	Nov 06	Nov 07
Jane Doe	No	No	

If these records are accurate, we strongly encourage you to go to the polls on November 6 to
participate in the election for governor of Kentucky and other offices.

If you need information about the candidates, you can visit http://vote.ky.gov/learn/

If you need a ride to the polls, you can contact Kentuckians for the Commonwealth at (859) 420-8919
to request a ride.

To encourage you to vote, we will also be sending you a reminder.

(Sponsoring Organization) works to encourage all voters to exercise their civic duty and
vote on Election Day. Your voice is needed, so please, this year, do your duty and go to the polls
and vote on November 6.

(Sponsoring Organization) works to study ways to encourage voting and to increase participation in the electorate.
(Sponsoring Organization) is a non-partisan, non-profit organization that does not support any candidate.

Hawthorne Treatment

Dear Registered Voter:

Why do so many people fail to vote? We've been talking about the problem for years, but it only seems to get worse.

This year, we're trying to figure out why people do or do not vote. We'll be studying voter turnout in the November 6 statewide election for governor.

Our analysis will be based on public records, so you will not be contacted again or disturbed in any way. Anything we learn about your voting or not voting will remain confidential and will not be disclosed to anyone else.

The chart below shows your name from the state list of registered voters, showing past votes, as well as an empty box which we will fill in to show whether you vote in the November 6 statewide election.

123 Main Street, Any Town, KY, 40600

	June 06	Nov 06	Nov 07
Jane Doe	No	Yes	

We will leave the box blank if you do not vote.

DO YOUR CIVIC DUTY - VOTE!

(Sponsoring Organization) works to study ways to encourage voting and to increase participation in the electorate.
(Sponsoring Organization) is a non-partisan, non-profit organization that does not support any candidate.

Hawthorne-plus-Survey Treatment

Dear Registered Voter:

PUBLIC RECORDS SHOW THAT YOU MISSED AT LEAST ONE ELECTION LAST YEAR.   The table below indicates your voting record for 2006.

123 Main Street, Any Town, KY, 40600

	June 06	Nov 06	Nov 07
Jane Doe	No	Yes	

For this reason, we are asking you to complete and return the attached survey indicating the reason why you are not participating in elections. We have included a return envelope for your response.
===
Non-Voter Survey

1.   Please indicate which of the following reasons best explains your failure to vote in the 2006 elections?

    __   Dissatisfaction with the candidates
    __   Not enough time
    __   Not aware of the election
    __   Don't follow politics
    __   Other: _____

2.   Would you be more likely to vote if you could vote by mail in Kentucky?

    __   Yes
    __   No
    __   Unsure

3.   Would you be more likely to vote if someone offered you a ride to the polls?

    __   Yes
    __   No
    __   Unsure

4.   Would you be more likely to vote if someone called your home to remind you or sent you a reminder in the mail?

    __   Yes
    __   No
    __   Unsure

5.   Please indicate which of the following statements best reflects your attitude toward voting.

    ___   Voting is optional. It doesn't really matter if I vote.
    ___   My vote makes no difference.
    ___   I know voting is important; I just did not get around to it in 2006.

Thank you for helping us understand why so many voters failed to participate in the 2006 elections. Please mail your completed survey in the envelope we have provided to *(Sponsoring Organization)*, P.O. Box *(###)*, Frankfort, KY 40602.

(Sponsoring Organization) works to encourage all voters to exercise their civic duty and vote on Election Day. Your voice is needed, so please, this year, do your duty and go to the polls and vote on November 6.

(Sponsoring Organization) works to study ways to encourage voting and to increase participation in the electorate.
(Sponsoring Organization) is a non-partisan, non-profit organization that does not support any candidate.